

Appl. No. 10/085,919
Amdt. dated November 22, 2004
Reply to Office action of July 21, 2004

REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 1-8, and 10-11 remain in the application. Claims 1, 2, and 8 have been amended. Claim 9 has been canceled.

More specifically, claims 1 and 8 have been further clarified by emphasizing the crucial features of the invention having to do with the individual elements of the scan chains and with the monitoring/detection of a certain event during program execution. In claim 1, the elements that can be connected to form the scan chains can selectively change their logic state during program execution. If, during program execution, a certain event is detected, the current setting of the elements is frozen. This allows the elements to be connected to a scan chain and the state of each of the elements to be "looked at" for determining how an error came about.

As explained in the introductory text, certain faults are difficult to detect because they occur only in very limited circumstances and they do not occur during regular testing operation. Accordingly, the invention provides for scan chain testing that exposes the elements that can be connected to scan chains to regular program execution and then allows scan

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chain-type testing if a trigger event has been detected during program execution.

In claim 8, we define a method in which the scan chain elements are "frozen" during program execution when a certain event is detected during program execution. The error evaluation step of the original claim 9 has been incorporated into claim 9.

Claim 2 has been amended by correcting an obvious clerical error.

We now turn to the art rejection in which claims 1 and 3-7 have been rejected as being anticipated by Churchill et al. (U.S. 6,006,347) under 35 U.S.C. § 102(e). We respectfully traverse on the basis of the amended claims.

We agree with the Examiner's interpretation of Churchill, as outlined in the paragraph bridging pages 3 and 4. That summary, however, does not touch on the claimed invention which deals with monitoring for a certain event during program execution and, upon detecting a certain event, freezing the given elements. Churchill does have scan chains, but Churchill does not provide for the structure capable of blocking any

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further changes to the logic state of the elements of the scan chains when a certain event occurs during program execution.

As pointed out by the Examiner, Churchill contains a teaching that the clock is disabled on certain scan lines so that data are not further shifted into the scan register (a FIFO register) or output from the scan register. As illustrated in Fig. 3 of Churchill, when the signals SE and TM are set to low, the decode logic 308 disables the scan register 306 (pin EN into the scan register). The clock on line 320 is then disabled and the scan register no longer shifts. Besides the lack of shifting of the scan register, the decode logic 304 also does not receive a further input from the scan register and thus does not further provide control input to the programmable delay circuit 302. In effect, then, the locking of the scan register 306 is a locking of the given delay in the programmable delay circuit 302, or exposing the system to an external clock rather than further utilizing the internal clock. See, for example, col. 7, lines 1-12.

It is also important to note, with regard to the claimed invention, that the three different states into which the configuration of Fig. 3 of Churchill may be placed are monitoring and testing states. Churchill does not teach monitoring the program execution and initiating any of the

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three states of the circuit during program execution upon detecting the certain event.

Churchill, therefore, does not anticipate claim 1.

On page 5 of the Office action, claims 8, 10, and 11 have been rejected as being anticipated by Smith (U.S. 5,642,363) under 35 U.S.C. § 102(b). We respectfully traverse on the basis of the amended claim 8.

The above arguments in support of claim 1 relative to Churchill equally apply to claim 8. Smith does not teach a method in which, when a given event is detected, the elements that can be connected into scan chains are "frozen" in their state. Smith provides for a diagnostic processor with which the various scan chains (scan paths) are configured. As illustrated in Fig. 3, the circuit cycles through a variety of scan path configurations by configuring a certain scan path, sending a data stream through the path and, once the given path has been fully tested, a further path is configured.

Smith does not monitor for an event during program execution and then "freeze" the elements in their state once a given event has been detected. Smith, therefore, cannot anticipate the claimed invention.

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Turning now to the issue of obviousness, the foregoing arguments are equally applicable in this context. Not only do neither Churchill nor Smith disclose the basic idea of monitoring the system during program execution, but they also do not provide for the possibility of locking the elements in their current state when a certain event is detected during program execution. The secondary references cited by the Examiner do not make up for the shortcomings of the primary references. That is, the secondary references do not modify either Churchill or Smith to lead one of skill in the art to the claimed invention.

In summary, none of the references, whether taken alone or in any combination, either show or suggest the features of claims 1 and 8. These claims are, therefore, believed to be patentable over the art and since all of the dependent claims are ultimately dependent on claim 1, they are believed to be patentable as well.

In view of the foregoing, reconsideration and allowance of claims 1-11 are solicited.

Petition for extension is herewith made. The extension fee for response within a period of one month pursuant to Section

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1.136(a) in the amount of \$110.00 in accordance with Section
1.17 is enclosed herewith.

Please charge any other fees which might be due with respect
to Sections 1.16 and 1.17 to the Deposit Account of Lerner and
Greenberg, P.A., No. 12-1099.

Respectfully submitted,



For Applicants

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WHS:tk

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